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10/083,313	02/25/2002	Sundara Murugan	P4524	5495

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EXAMINER	
TSEGAYE, SABA	

ART UNIT	PAPER NUMBER
2619	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/083,313	MURUGAN, SUNDARA	
	Examiner	Art Unit	
	SABA TSEGAYE	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-9,11-22 and 24-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 6-9, 11-22 and 24-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/26/08 has been entered.

2. Claims 1-4, 6-9, 11-22 and 24-35 are pending. Currently no claims are in condition for allowance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-4, 6-9, 11-22 and 24-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1:

Line 7, the phrase "the APS server application" lacks antecedence basis.

Line 9, the phrase "the APS software-dependent data" lacks antecedence basis.

Lines 11-12, the phrase "said software" lacks antecedence basis.

Lines 15-16, the phrase "the plurality of primary interfaces" lacks antecedence basis.

Claim 12:

Line 9, the phrase "the APS software-dependent data" lacks antecedence basis.

Lines 15-16, the phrase "the primary and backup processors" lacks antecedence basis.

Line 16, the phrase "the same processor" lacks antecedence basis.

Claim 24:

Line 13-14, the phrase "the plurality of primary interfaces…" lacks antecedence basis.

Claim Rejections - 35 USC § 103

5. Claims 1-4, 6-9, 11-22 and 24-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simons et al. (US 6,332,198) in view of Zadikian et al. (US 6,724,757).

Regarding claims 1 and 12, Simons discloses, in Figs 1, 5, 29, 33A, an automated-protection-switching software suite for distribution over multiple processors (12, 16a-16n) of a distributed processor router (10), and executing from a dedicated memory media coupled to each processor, comprising:

an APS server module (14, 20, 28) running on a first one of the multiple processors (12) for managing communication and distributing configuration and state information (column 7, lines 25-41); and

APS client modules (18a-18n, 22a-22n) running on second ones of the multiple processors (16a-16n), the APS client modules for monitoring interface state information, reporting to the APS server application, and for negotiating with other APS client modules (column 7, lines 25-41);

characterized in that all of the APS software-dependent data resides locally in APS software of individual APS modules (software backup spread on a combination of both primary and backup line cards in order to use the backup processes to quickly begin performing as if it was a failed primary line card (column 42, lines 39-52); **data reflecting the network connections** established by each primary process may be **stored** within each of the backup processes or independently on backup line card 16n (column 42, lines 63-67) *this allows to quickly begin transmitting network data over previously established connections to avoid the loss of these connections and minimize service disruption* (column 43, lines 1-8)) and further characterized in the that APS interface relocation from a primary interface (16a-16b) to a backup interface (16n) is performed through direct communication between the APS client modules running on the processors supporting the involved interfaces (fig 33a; column 42, lines 39-63).

Further, Simons discloses that a level of hot state (**software backup**) backup is inversely proportional to the resynchronization time, that is, as the level of hot state backup increases, resynchronization time decreases (column 42, lines 4-11; column 1, lines 33-57). Furthermore, backup line *card 16n executes backup processes to provide software backup*. It is preferred that line card 16n be at least partially operational and ready to use the backup processes to quickly begin performing as if it was a failed primary line card (column 42, lines 39-52).

Fig. 29 shows that each primary line card (16a-c) could execute more or less than two backup (for example, backup ATM 468-471) processes (claimed "the plurality of primary interfaces comprise and APS grouping of interfaces connected to a SONET network, and the APS grouping of interfaces is physically supported on one processor").

However, Simons does not expressly disclose that an APS protocol performs a switchover within a 50-millisecond time window.

Zadikian teaches a router that supports the restoration of a majority of network failures within **less than 50** ms (column 10, lines 48-55).

It would have been obvious to one ordinary skill in the art at the time the invention was made to add a method that switchover within 50 ms time window, such as that suggested by Zadikian, in the method for supporting multiple redundancy of Simons in order to minimize synchronization time and to provide a fast restoration time.

Regarding claims 2, 3, 13, 27 and 28, Simons discloses the APS software suite wherein the distributed processor router is connected to and operating on a data-packet-network (column 12, lines 50-67).

Regarding claim 4, Simons discloses the APS software suite wherein the APS software suite is implemented to protect the integrity of a plurality of primary interfaces of the router by enabling backup of individual ones of the interfaces at any given time during router operation (column 39, line 43-column 40, line12; column 45, lines 56-61).

Regarding claims 14 and 29, Simons discloses the APS software suite wherein the plurality of primary interfaces comprises an APS grouping of interfaces connected to a SONET network (column 45, line 56-column 46, line 29).

Regarding claims 6 and 20, Simons discloses the APS software suite wherein the configuration and state information generic to a primary interface for relocation is mirrored to the client supporting the backup interface for the purpose of initializing and activating the backup interface to function as the primary interface (column 27, lines 51-67).

Regarding claims 7 and 21, Simons discloses the APS software suite wherein the distributed processors communicate with each other through a network of fabric cards implemented within the router (column 48, lines 1-11; column 50, lines 62-67).

Regarding claims 8 and 22, Simons discloses the APS software suite wherein all communication exchanges between the distributed APS components follow a message sequence scheme wherein each request and response has a sequence number (column 11, lines 31-47).

Regarding claim 9, Simons discloses the APS software suite wherein interface relocation is initiated by an APS client module after detecting an event requiring relocation at the primary interface to be relocated (column 40, line 60-column 41, line38).

Regarding claim 11, Simons discloses the APS software suite wherein the APS grouping of interfaces is distributed to and physically supported by multiple processors (processors 12, 13; column 27, lines 51-67).

Regarding claim 15, Simons discloses the distributed processor router wherein the APS software suit includes a server application, a server-client application, and a client module (column 7, lines 26-41).

Regarding claim 16, Simons discloses the distributed processor router wherein the server application runs on a control card, and the server-client application as well as the client module runs on a line card (column 7, lines 26-57).

Regarding claim 12, Simons discloses, in Figs 1, 5, 29, 33A, an automated-protection-switching software suite for distribution over multiple processors (12, 16a-16n) of a distributed processor router (10), and executing from a dedicated memory media coupled to each processor, comprising:

an APS server module (14, 20, 28) running on a first one of the multiple processors (12) for managing communication and distributing configuration and state information (column 7, lines 25-41); and

APS client modules (18a-18n, 22a-22n) running on second ones of the multiple processors (16a-16n), the APS client modules for monitoring interface state information, reporting to the APS server application, and for negotiating with other APS client modules (column 7, lines 25-41);

characterized in that all of the APS software-dependent data resides locally in APS software of individual APS modules (software backup spread on a combination of both primary and backup line cards in order to use the backup processes to quickly begin performing as if it was a failed primary line card (column 42, lines 39-52); **data reflecting the network connections** established by each primary process may be **stored** within each of the backup processes or independently on backup line card 16n (column 42, lines 63-67) *this allows to quickly begin transmitting network data over previously established connections to avoid the loss*

of these connections and minimize service disruption (column 43, lines 1-8)) and further characterized in the that APS interface relocation from a primary interface (16a-16b) to a backup interface (16n) is performed through direct communication between the APS client modules running on the processors supporting the involved interfaces (fig 33a; column 42, lines 39-63).

Further, Simons discloses that a level of hot state (**software backup**) backup is inversely proportional to the resynchronization time, that is, as the level of hot state backup increases, resynchronization time decreases (column 42, lines 4-11; column 1, lines 33-57). Furthermore, backup line *card 16n executes backup processes to provide software backup*. It is preferred that line card 16n be at least partially operational and ready to use the backup processes to quickly begin performing as if it was a failed primary line card (column 42, lines 39-52).

As shown in Fig. 1, the primary and backup line cards (claimed processors) (16a-16n) comprises the same computer system 10 (claimed the same processor).

However, Simons does not expressly disclose that an APS protocol performs a switchover within a 50-millisecond time window.

Zadikian teaches a router that supports the restoration of a majority of network failures within **less than 50** ms (column 10, lines 48-55).

It would have been obvious to one ordinary skill in the art at the time the invention was made to add a method that switchover within 50 ms time window, such as that suggested by Zadikian, in the method for supporting multiple redundancy of Simons in order to minimize synchronization time and to provide a fast restoration time.

Regarding claim 17, Simons discloses the distributed processor router wherein indication of an event is an APS signal received through the target interface on the backup processor (column 35, line 58-column 36, line 27).

Regarding claim 18, Simons discloses the distributed processor router wherein the received APS signal indicates one of the failure or severe degradation of the target interface (column 35, lines 36-47; column 36, lines 28-49).

Regarding claim 19, Simons discloses the distributed processor router wherein the received APS signal indicates an administrative request for interface relocation (column 39, lines 10-60).

Regarding claim 24, Simons discloses a method for relocating a primary router interface to a designated backup router interface using an APS suite distributed over multiple processors of a distributed processor data router comprising steps of:

a) mirroring current configuration and state information of the primary router interface to the processor supporting the designated backup router interface (column 27, lines 51-67);

b) receiving indication of a requirement to initiate an APS switchover (column 35, line 58-column 36, line 49);

c) determining if the backup router interface is available (column 35, line 58-column 36, line 49); and

d) activating the designated backup interface using the mirrored configuration and state information (column 27, lines 51-67).

Further, Simons discloses that a level of hot state (software backup) backup is inversely proportional to the resynchronization time, that is, as the level of hot state backup increases, resynchronization time decreases (column 42, lines 4-11; column 1, lines 33-57). Furthermore, backup line card 16n executes backup processes to provide software backup. It is preferred that line card 16n be at least partially operational and ready to use the backup processes to quickly begin performing as if it was a failed primary line card (column 42, lines 39-52).

Fig. 29 shows that each primary line card (16a-c) could execute more or less than two backup (for example, backup ATM 468-471) processes (claimed "the plurality of primary interfaces comprise and APS grouping of interfaces connected to a SONET network, and the APS grouping of interfaces is physically supported on one processor").

However, Simons does not expressly disclose that an APS protocol performs a switchover within a 50-millisecond time window.

Zadikian teaches a router that supports the restoration of a majority of network failures within **less than 50** ms (column 10, lines 48-55).

It would have been obvious to one ordinary skill in the art at the time the invention was made to add a method that switchover within 50 ms time window, such as that suggested by Zadikian, in the method for supporting multiple redundancy of Simons in order to minimize synchronization time and to provide a fast restoration time.

Regarding claim 25, Simons discloses the method comprising an additional step e) for reporting any changed route results to a task manager responsible for distributing updated route tables to processors (column 28, lines 1-67).

Regarding claim 26, Simons discloses the method comprising an additional step for updating a forwarding database according to a switchover made (column 28, lines 1-67).

Regarding claim 30, Simons discloses the method wherein in step b) the indication is received at the primary interface (column 35, line 58-column 36, line 27).

Regarding claim 31, Simons discloses the method wherein in step b) the indication is received at the backup interface (column 35, lines 36-47; column 36, lines 28-49).

Regarding claim 32, Simons discloses the method wherein in step b) the indication is of the form of an administrative request (column 39, lines 10-60).

Regarding claim 33, Simons discloses the method wherein in step c) determination of availability of the backup interface partly depends on a priority state of the interface requiring backup (column 15, line 66-column 16, line17).

Regarding claim 34, Simons discloses the method wherein in step c) the backup interface is physically located on a processor separate from that of the primary router interface (fig. 1, 16a-16n; fig. 35, 546e).

Regarding claim 35, Simons discloses the method wherein in step a) the configuration and state information is selected from a table of such sets of information stored on the processor hosting the backup router interface (column 27, line 51-column 28, 65).

Response to Arguments

6. Applicant's arguments with respect to claims 1-4, 6-9, 11-22 and 24-35 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant argues that Simmons does not disclose "*APS grouping of interfaces is physically supported on one processor*". Examiner respectfully disagrees. Simmons shows in Figs. 25 and 26, that each primary card associated with plurality of ports (44a-d). Fig. 29, also, shows that each primary line card (16a-c) could execute more or less than two backup (for example, backup ATM 468-471) processes (claimed "the plurality of primary interfaces comprise and APS grouping of interfaces connected to a SONET network, and the APS grouping of interfaces is physically supported on one processor").

8. Regarding claim 12, Applicant argues that "*primary and backup processors comprise the same processor*". Examiner respectfully disagrees. Simons clearly shows, in Fig. 1, that computer 10 (processor) includes multiple line cards 16a-16n (primary and backup processors). Further more, Simons discloses that each primary line card could execute more or less than two backup processes. Examiner believes that the claims, given their broad reasonable interpretation, read on the references applied.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SABA TSEGAYE whose telephone number is (571)272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wing F. Chan/
Supervisory Patent Examiner, Art Unit 2619
4/14/08

Saba Tsegaye
Examiner
Art Unit 2619

/S. T./
April 8, 2008